*Health Promotion Perspectives, 2013, 3(2), 276-287*
doi: 10.5681/hpp.2013.032
http://journals.tbzmed.ac.ir/HPP

# Advantages and Disadvantages of Different Methods of Hospitals' Downsizing: A Narrative Systematic Review

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**ARTICLE INFO**

**Article type:**
*Review Article*

**Article history:**
*Received: Aug 18 2013*
*Accepted:Nov 05 2013*
*e-published: Dec 31 2013*

**Keywords:**
*Hospital,*
*Downsizing,*
*Downsizing method,*
*Review*

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**ABSTRACT**

**Background:**Hospitals as key actors in health systems face growing pressures especially cost cutting and search for cost-effective ways to resources management. Downsizing is one of these ways. This study was conducted to identify advantages and disadvantages of different methods of hospital' downsizing.
**Methods:** The search was conducted in databases of Medlib, SID, Pub Med, Science Direct and Google Scholar Meta search engine by keywords of Downsizing, Hospital Downsizing, Hospital Rightsizing, Hospital Restructuring, Staff Downsizing, Hospital Merging, Hospital Reorganization and the Persian equivalents. Resulted 815 articles were studied and refined step by step. Finally, 27 articles were selected for analysis.
**Results:** Five hospital downsizing methods were identified during searching. These methods were reducing the number of employees and beds, outsourcing, integration of hospital units, and the combination of these methods. The most important benefits were cost reduction, increasing patient satisfaction, increasing home care and outpatient services. The most important disadvantage included reducing access, reducing the rate of hospital admissions and increasing employees' workload and dissatisfaction.
**Conclusion:** Each downsizing method has strengths and weaknesses. Using different methods of downsizing, according to circumstances and applying appropriate interventions after implementation, is necessary for promotion.

**Citation:**Mousazadeh Y, Jannati A, Jabbari Beiramy H, AsghariJafarabadi M, Ebadi A. Advantages and Disadvantages of Different Methods of Hospitals' Downsizing: A Narrative Systematic Review. Health Promot Perspect 2013; 3(2):276-287.

## Introduction

Hospitals are key actors in national health systems, and consume a large share of spending[1]. For example in European regions, the hospital sector is consuming 35–70 percent of national expenditures on health care[2]. Very large sums were spent on construction, maintenance and rehabilitation hospitals around the world annually. Although, appropriate evidences about achieving expected benefits are little[2]. The World Health Organization has estimated in 1989, it wastes 40 percent of United States' health system resources[3]. It shows that resources

can be achieved through efficiency increasing is very significant[3].

Nowadays hospitals face particular challenges and problems in Iran, for example, in the issues of quality, relevancy, and effectiveness as consequences of severely economic disruption[4]. In the same time, this system allocates more than 50% of total health funds to hospital sector. Hospitals of Iran have more than 130 thousand employees (50% of health staffs) however the low occupancy of hospital beds (54%) in comparison with developed countries (80%-85% bed occupancy) [5]. It shows the need for proper utilization of limited resources. Furthermore, only 82% of beds in Iran's hospitals are active[5], it means high resources spend on costs, staffing, salaries and maintenance. It might be cost-effective to cut or limit further expansion of hospital beds unless it has been warranted by increased demand[5].

It seems necessary to promote efficient management of hospitals by implementing various strategies[6]. Downsizing is one of strategies. Cameron expresses definition of downsizing: downsizing is a set of activities that reduce the number of employees and results higher efficiency and costs reduction[7]. Appelbaum and colleagues also argue that downsizing is a step to reduce production costs and staff permanent positions, privatization, or it refers to contracting services and activities[8]. Downsizing begins in US auto industry following oil crisis in 1973[9]. Organizations has taken downsizing strategy to achieve an appropriate size, reconstruction, adapting to technological advances, specialization in their core activities, flexibility, costs reduction, stay competitive, speed in decision making and rapid implementation of ideas[5] .

The hospital sector has experienced considerable restructuring and downsizing throughout the industrialized world and the last of 20 years. The purpose of these changes was cost cutting, reducing excess capacity and increasing the appropriateness of care[10,11]. In other words, the process of bed, staff and resource reduction is known as a common part of the organizational life in hospitals of Canada, U.S.A and European countries[12-14]. Downsizing policies are pursued by different strategies in hospitals. for example, reducing the number of beds, reducing personnel and management positions, integration of hospital units, using the power of the private sector, merging hospitals, re-engineering, outsourcings, modifications to clinical staffing, skill combination and so on[15-19].

There are some relating evidences about downsizing strategies in literature: 47% bed reduction in Finland and at least 10% in other western European countries, reducing the number of hospitals from 305 to 65 and the number of beds from 14.4 to 6.5 per 1,000 people in Moldavia, cutting 52% of hospital beds in Kazakhstan[14] merging over 900 hospitals during the period 1995–2002 in the United States[19] merging fourteen Danish hospitals into five new regions hospitals[18], merging sterilization service of regional hospital in Austria by establishing one equipped center instead of three inefficient centers[20] and outsourcing different sections of hospitals in the range of 13.5 to 94.6 percent in Taiwan[17].

Excess capacity in the hospitals has become a serious problem in terms of technical, managerial and policy issues similar to all around the world and Iran[15].In most of the developing countries including Iran, new hospitals are often constructed with no real assessment. Distributions of hospitals are in the geographical based instead of need based[21]. Therefore, international experts recommend to stopping hospital beds spreading[5] and other interventions[22]. Hospital sector policy makers are looking for new solutions in response to the growing pressures, especially the lacks of financial resources[23]. It seems downsizing with different methods is one of these solutions. But, administrative reform has not been done about hospital downsizing in our country[24].

Despite the fact that downsizing is conducting as a common method versus economic pressures in health systems, there are a few empirical evidences of the effectiveness and ineffectiveness. An international review of published researches showed that

88% of the 68 studies identified some adverse effects. Another meta-review was reached similar conclusions. Others argued requirement of significant policy interventions[25]. No empirical studies have been conducted on economic benefits of hospital downsizing in Iran. There are only a few known existing studies on outsourcing and merging in Iran health system[23,26,27].

This study was designed for searching about various advantages and disadvantages of hospitals' downsizing methods in order to knowledge production for improvement of country' hospitals situation.

## Materials and Methods

This study is a review in the databases of Medlib, SID, Pub Med, Science Direct and Google Scholar meta-search engine using the keywords of Downsizing, Hospital Downsizing, Hospital Rightsizing, Hospital Restructuring, Staff Downsizing, Hospital Merging, Hospital Reorganization, in the period of 1980 to 2011. Overall, 815 articles were the results of searching and other documents. The most relevant articles were selected considering inclusion criteria included English and Persian-language, referring to the hospital downsizing, including downsizing methods and the advantages and disadvantages of each of these methods. Exclusion criteria were downsizing in other parts of the health system except hospitals, letters to editor articles, and summary of conference articles (Table 1).

First, titles of all articles were reviewed and 491 articles were excluded due to inconsistency with study aims, and 23 articles were omitted because they were duplicated among three databases (Pub Med, Science Direct and Google Scholar). Remaining 301 articles were reviewed in second stage (Studying abstracts of the selected articles), and 218 articles were excluded, because they were not related to downsizing in hospital (Related to other health care providers), or only predicted study about consequences of downsizing. In the third phase (Study and review articles' full texts), 83 remained articles were reviewed and 56 articles were excluded, because they did not show the method or effects of downsizing. Finally, the key points of 27 articles were summarized and shown in results and tables. Authors conducted this study in six months.

## Results

The most important downsizing methods include: reducing the number of beds, reducing the number of employees, integrating hospital units, out sourcing and using the power of the private sector, and a method based on combination of the mentioned methods According to identified studies. Each of these methods has different advantages and disadvantages which are mentioned separately. The mention rate of different methods of hospital downsizing has been demonstrated in Table 2.

Reducing the number of beds led to negative growth in yearly costs in Canadian hospitals in 1992 – 1995 (-4/2%)[28].It was accompanied with increasing outpatient care services; increasing home care services and extending outpatient surgery include angioplasty, cataract and bi-pass in Canada and other countries[28,29].Other experiences in British Columbia (downsizing of acute care services) showed small changes in the use of health care and no overall change in age adjusted death rates[29]. The results of Reduction in psychiatric hospital beds were very interesting in Australia, so that cases of depression treatment were increased to 360%[30].Suicide rate among psychiatric patients had conflicting results after bed reduction, and it was reduced in some cases and in other cases was no change[12,30].

Although, bed reduction had no significant change in access to care, but, it was reduced inpatient days and increased discharge rate[29, 31].Some findings imply limiting the number of beds is not an appropriate policy without balancing the number of labors[32]. Results of bed closures on cost reduction are contradictory. For example research from the United Kingdom suggested about 20% cost savings in caused of bed reduction. Several studies from North America have found about increase in the cost of hospital care per patient[14].

**Table 1:** Process of articles searching

| Database | Period | Key words | Results | Selected articles |
|---|---|---|---|---|
| Pub Med | 1980-2011 | Downsizing | 331 | 5 |
| | | Staff downsizing | 3 | |
| | | Hospital downsizing | 12 | |
| | | Hospital restructuring | 75 | |
| | | Hospital reorganization | 14 | |
| | | Hospital merging | 54 | |
| Science Direct | 1980-2011 | Hospital downsizing | 4 | 6 |
| | | Hospital restructuring | 21 | |
| | | Hospital rightsizing | 1 | |
| | | Hospital reorganization | 5 | |
| | | Hospital merging | 20 | |
| Google scholar | 1980-2011 | Hospital downsizing | 32 | 6 |
| | | Hospital rightsizing | 9 | |
| | | Hospital merging | 167 | |
| SID | – | Downsizing | 2 | 4 |
| | | Integration | 4 | |
| | | outsourcing | 26 | |
| Medlib | – | Downsizing | 1 | 0 |
| | | Integration | 18 | |
| | | Outsourcing | 0 | |
| Using of references and related articles | – | – | 16 | 6 |

**Table 2:** The percent of downsizing method

| Name of method | n | % |
|---|---|---|
| Reducing employees | 9 | 33.3 |
| Reducing beds | 7 | 25.9 |
| Out sourcing use private sector | 5 | 18.5 |
| Mixed method | 4 | 14.4 |
| Integration of wards and units | 2 | 7.4 |

Occasionally, bed reduction led to reduction in admissions but increased the average lengths of stay even more. On the other hand, staff workload per case increased due to the higher proportion of emergency patients[14].Empirical research on the impact of bed reduction on utilization concluded that access to hospital was not adversely affected on quality of care, readmission rates, and contact with physicians. Besides, the health status of the population as measured by mortality rate did not change. Following up last study confirmed the quality of care was unaffected after bed reduction. Furthermore access and utility of care in vulnerable groups (elderly and low incomes) remained unchanged. Results of 50% acute beds reduction associated with 18.5% reduction in deaths in hospital and an 83.3% reduction in the length of final stay in Alberta, Canada, in the 1990s[14].

Reducing the number of employees was another way of hospital downsizing. The impact of staff reduction has been reported at the organization's cost reduction like the bed reduction method[33].Removing intravenous (IV) therapy and infection control teams from the hospitals in US led to decreasing costs[34].Reducing employees is a predictor of increased risk of disability retirement among remained employees from downsizing[35]. Different studies indicated reducing the number of employees did not change the quality of service significantly, but workload and absenteeism were increased. Furthermore, job satisfaction and mental health were reduced in unemployed and remaining workers and the intensity of reducing was reported more among the full-time workers. Employee turnover was increased after downsizing but, it was lower among full-time workers[11,36-39].

The high workload after staff reduction was recognized as decreased organizational commitment. Of course, it was high among less experienced employees[30].Employees re-

duction policy was reduced managerial and supervisory positions in some cases. This position reduction has questioned ensuring safe and adequate care for patients, especially in countries like Australia that was experienced supervisor nurses reduction[40].

The third method is integration**.** It occurs when wards and units have same or similar activities with inefficient performance. Integration led to significant reducing the cost of labors, materials and goods and current expenditure of hospital before and after integration ($P<0/0001$)[26] Increasing purchasing power, thus saving money for the organization (with proper planning) were other effects of hospital units integration[32] Sometimes, the whole of hospital integrate other hospitals. It is CaliforniaHospital experiences. It caused to increasing income per patient in merged hospital versus other hospitals. But, functional costs were increased[41].

The fourth method (outsourcing) is an activity which organizations can use contracts with outside of the organization to focus on core activities. Hospitals benefit from this policy in their favor around the world. Findings about this method especially in Iran demonstrated processes improvement, customer satisfaction increasing compliance with the requirements of the law[42].Outsourcing has become the effort to deal with the limitations of the human resources and reducing costs, creating money for hospital and saving time for administrators. Besides, outsourcing helps to hospitals cater their requirements without much financial burden[27,28,43]. Lack of skills among managers about contract with private sector and lack of a strong private sector were introduced as outsourcing failure factors[8].

The mixed methodcombines downsizing methods was mentioned in the previous cases. The mentioned mixed methods according to the findings of the studies were integration unit and reducing the number of staffs, reducing the number of beds and outsourcing, and reducing the number of beds and integration.

In some cases beds reduction was lead to transferring the part of work load to private sector. For example, reducing the number of psychiatric beds in US and acute care beds in Scotland has been transferred a part of work loud to private sector for providing outpatient care services[44].This method led to costs reducing while death rates remained unchanged[45]. But, sometimes participation by the society and private sector was not sufficient to activate the services and access rate was reduced[45].Bed reduction and integration of nursing units caused the compensation of deficits in Kitchener-Waterloo Hospital of Canada[13].Experience of merging the units and reducing staffs (the erosion of employee policies and reducing layers of management) and incorporating public and private laboratories failed to make much impact on the quality; however, it reduced costs [46].

## Discussion

The aim of this study was investigate and identify the advantages and disadvantages of different methods of hospital downsizing. The advantages of the different methods of hospital downsizing included reducing costs and cutting budget deficit, creating income and saving money for the organization, increasing buying power, explaining the use of outpatient care and home care services, increasing patient improvement and service provision, increasing customer satisfaction, matching process with legal requirements, decreasing inpatient days, saving time for the managers. However disadvantages of using these methods were, no reduce in costs due to imbalanced manpower, lack of impact on quality, decrease admission, decrease access and mental health in remained staffs and increase workload. The advantages and disadvantages of each downsizing method are shown in Table 3.

**Table 3:** The advantages and disadvantages each method of hospital downsizing

| Method of downsizing | Advantage | Disadvantage |
|---|---|---|
| Reducing the number of beds | Cost reduction, generate savings for the organization, expansion of outpatient surgical care and home care services, an increasing number of patient improvement, decrease inpatient days, reduction in deaths in hospital | Occasionally costs and inpatient days increased, staff workload per case increased due to the higher proportion of patients in the immediate |
| Reducing the number of employees | The most visible result was cost reduction | Increase workload for employees and increase absenteeism, decrease job satisfaction |
| Integration hospital wards and units | Reduce the cost of labor, materials and consumer goods, increase purchasing power of the organization, save money for the organization | Integration of units need to precise planning. otherwise, no foresight in the management, it will result in none compensate consequences |
| Out sourcing and use the power of the private sector | More matching Service with regulatory requirements, improve service delivery processes, increase customer satisfaction, contract with limited manpower, saving time for administrators | Lack the skills of Managers to contract with private sector and lack of powerful private sector caused outsourcing is failed |
| Mixed method | Costs reduction and budget deficits compensation | No effect on the quality of service, no adequate care for patient |

The method of employee's reduction allocated largest number of studies in Table 2. This result is justified because, the greatest amount of public funding is relating to staffs[23].But, Collins, Ryder, Browm and Iverson funded reducing employee has some negative effects, for example, weakened mental energy, increasing workload, and weakened job satisfaction on employees[33,34,36,37].However, Quinlan showed negative impacts can be reduced via identifying root causes and challenges of the work environment and by reorganizing and motivating employees properly. For example, the OHS laws in Australia dealing with these cases[25]. These laws concerned with changes of work environment and emphasis on clear tasks and continuous analysis of work environment and personnel acceptance rate.

The greatest number of studies included reducing the number of hospital beds after reducing the number of employees. The most important advantage of this method of downsizing is cost reduction. It is estimated in 2000, that nearly 6,000 billion dollars of investment needed to achieve to relations of a small hospital for out-patients per 40,000 people and three beds for every 1,000 people[21].The results of Tully and Sheps showed reducing the number of beds lead to increase in outpatient services and home care. These services were used when patient does not desire to stay in the hospital, or when patient have special medical or mental condition to stay in hospital. It has an important role in patient satisfaction, reputation and revenue for the hospital[24, 25].McKee concluded that bed reduction lead to reduction in admissions but increased the average lengths of stay[14].

Outsourcing and integration were downsizing methods especially in Iran. Findings demonstrated processes improvement, customer satisfaction increasing compliance with the requirements of the law and reduced costs, creating money for hospital and

saving time for administrators after outsourcing[27,28,43].Recently, the authors introduced hospital units integration and clinical outsourcing as the most important downsizing methods in public hospitals[6,47,48]. Gressani summarized management skills about contract with private sector and strong private sector were introduced necessary for outsourcing[9].Similarly, proper planning is important for integration according to Armstrong` study[32].

In the study about integration (downsizing of Tabriz health center) all indicators increased in order to productivity promotion[10].In other words, after merging of two health centers and reducing the number of employees, the quality and quantity of services did not change appreciably. Moreover, it has been emphasized on Hospital Administration in the cluster (virtual integration)[49,50].

The most important results of study showed that any downsizing methods are superior to another. In other words, each of these methods can be designed and implemented and be efficient according to the circumstances and possible consequences.These contents are consistent with findings of the study by Kazemek and Channon related to systematical steps that should be taken for hospital downsizing. These nine steps began with review of the organization status and situation of hospital and ends with an executable program[51].In fact, proper implementation has decisive role in downsizing success.

It seems that downsizing does not mean reducing population needs, but increasing functional capabilities with costs reduction. The important issues in downsizing are according to the needs of the population, access to services, equity in service delivery, costs reduction and increase in customer satisfaction[24].In general it can be said that determining a capacity for hospital services without assessment for the facility cannot be effective action. In another aspect, downsizing is necessary even after assessment for effectiveness and results of changing in people needs, changing disease patterns, high costs of hospital and so on. Downsizing is a necessity, because, its results is positive and it limits needed resource and helps preservation of health. It will create useful results with implementing monitoring and evaluation techniques. It will be useful precise planning for collecting and recording relevant documents before downsizing implementation and defining possible indicators for downsizing evaluation.

Findings of long-term effects of downsizing indicated when downsizing is undermanaged; there is a danger of creation of an organizational down cycle which could be left unchecked over several years[52].Researches in Australia conclude by indicating a number of initiatives that would enable regulators, unions and employers to address the problems posed by downsizing more effectively[25].

## Conclusion

This study provides a relatively comprehensive perspective by studying advantages and disadvantages of each downsizing and could produce proper information for decision makings and planning. It is possible to mention to exclusion of studies in which it had been mentioned to downsizing in primary health care and other organizations providing health care, as one of the weaknesses of this study. So it is suggested to consider this point in future studies.

## Acknowledgments

This study is a part of MSc thesis. It was recorded in Research Deputy (code: 5/53/8998). The authors thank Vice-Chancellor of Research of the Tabriz University of Medical Sciences, Tabriz, Islamic Republic of Iran for the financial support provided.

## Competing interests

The authors declare that there is no conflict of interest.

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**Appendix A:** The Summery of Systematic Review Results Based on Advantages and Disadvantages of Different Hospital Downsizing Methods

| Author/ year/Country | Downsizing method | Advantage | Disadvantage |
|---|---|---|---|
| CH. Duffield//2007/ Australia | Reduce Nurse's management positions | - | Reduction in nurses management positions led to reduce safe care for patients |
| Torani, Maleki, Ghodosimoghadam&Gohari/2009/Iran | Pharmacy outsourcing in Tehran`s Firouzgar hospital | Create income for hospital (100 million Rials monthly) cost reduction to zero and 80% reduction in time that managers spent on pharmacy affairs, increase 50% of service delivery | - |
| Sheps, Reid, Barer, Krueger, Mcgrail,Green, Evans &Hertzman/ 2000/Canada | Reduce the number of acute care beds | increase 2 or 3 percent in the use of home care services - no change in mortality rates | - |
| Hsiao, Pai& Chiu/2009/Taiwan | equipment and manpower outsourcing | Contract with limited man power, save energy for management. hospital provide requirement without much financial burden | - |
| G.Danieala/2007/Iran | Outsourcing services, nutrition, Landry, facilities, and nursing services in 41 pilot hospitals | Save money and energy to the employees, improve service quality | Lack of strong private sector and management skills for contact with private sector led to negative impact of outsourcing |
| Yoon Bruckner/ 2009 /USA | Reduce the number of psychiatric care beds | Although suicide rates unchanged but increase health society | - |
| Ferdosi, farahabadi, rejalian&haghighat/2010/Iran | outsourcing of medical records in Isfahan`s Kashani hospital | Processes improvement=37.4, increase in customer satisfaction= 59% and compliance with the legal requirements =70% | - |
| Iverson & Pullman/ 2000/Australia | Reduce the number of employees in the hospital | - | un experienced employees inclined to leave organization more than experiences |
| H. Richardson/1999 | mixed method (combined public and private labs), and reduce employees in Ontario | - | Impact on the quality was low but costs was reduced |
| Ardent &Duchemin/ 1993/Canada | mixed method (reduce the number of nursing units and hospital beds in Toronto) | 50% reduction in the budget deficit | - |
| Regenberg, Joyce & Moeller/ 2002/USA | integrate library of 3 hospitals and nursing faculty in New Jersey | Save money due to the combined resources, buying power grew and achieve expanded access to health information | - |

**Appendix A:**Continued…

| Author/ year/Country | Downsizing method | Advantage | Disadvantage |
|---|---|---|---|
| R.J Burke/2002/Canada | Experiences of reducing the number of employees | - | Decrease job satisfaction, increase absenteeism and weakened mental status among employees |
| Burke, Ng &Wolpin/ 2010/USA | Experiences of reducing the number of employees | - | Dysfunction and decreased well-being of hospital employees |
| Tully &Saiant-Pierre/ 1997/Canada | Reduce the number of beds in the public sector by 14 percent | Increase the number of outpatient visits and reduce inpatient days. cost growth was negative in periods of time | - |
| Brown, Arnetz&Petersson/ 2003/Canada | reduce the number of employees in 1994 to 1999 | - | Quality of service remains unchanged - increase workload and decrease in mental capacity of employees |
| Vyssoki, Willeit, Blüml, Erfurth, Psota, Lesch&Kapusta/2011/Australia | 30% reduction in the number of psychiatric beds | Treatment of depression increase by 360% - Suicide rates declined and it improved access to outpatient services | - |
| Brownell, Roos&Burchill/ 1999/Canada | Reduce the number of hospital beds in Winnipeg | Increase outpatient care, decrease surgeries need to hospitalization and inpatient days - the quality of service remains unchanged | - |
| R.J Burke/ 2003/Canada | reduce the number of beds in Ontario | - | Job satisfaction and mental capacity decreased among survival of downsizing |
| Piacenza,Turati&Vannoni/2007/Italy | Reduce the number of beds in Italian sample hospitals | - | reduce the number of beds without balancing the number of employees cannot be appropriate effort to cut costs |
| Ryder, Scott & Helm/ 1998/USA | Decrease Some teams in hospital (infection control, intravenous feeding) | Reduction of mortality due to human errors, reduce costs of equipment | - |
| H.Chandra/2007?India | outsourcing of manpower and equipment | Reduce direct and indirect costs and generate revenue as a result of Outsourcing equipment such as MRI and ultrasound | - |
| G.D Bevelacqua/2010/USA | Reduce the number of beds for mental patient and use the power of the private sector (Mixed Method) in eastern states of US | Reduce 2.8 million dollars in costs, use of private power in outpatient services delivery to mental patient | Lack of access to adequate care |

**Appendix A:**Continued…

| Author/ year/Country | Downsizing method | dvantage | disadvantage |
|---|---|---|---|
| Dunnigan& Pollock/ 2003/Scotland | Reduce the number of beds and use of private sector power (Mixed Method) in lotian | - | specialty care, acute, surgical and so on, Increase participation of the private sector in the financing was not adequate and do not increase clinical activities |
| R.J Burke/2002/Canada | Experiences of reducing the number of employees | | Decrease job satisfaction, increase absenteeism and weakened mental status among employees |
| Burke, Ng &Wolpin/ 2010/USA | Experiences of reducing the number of employees | | Dysfunction and decreased well-being of hospital employees |
| Collins & noble/1992/Canada | Reduce the number of employees and 50 aligned positions in Kitchener-Waterloo hospitals | $ 2 million in spending cuts | - |
| Tabibi&maleki&mirzaee&farshid/2010/Iran | Integrate surgical and men internal ward, and surgical and female wards in Bu-Ali hospital in Tehran | 40% reduction in running expenditures | - |
| McKee M/2004/ Different Countries | Bed reducing | 20% cost savings from bed reductions in UK, in Alberta/ Canada, in the 1990s found that a reduction of 50% in acute beds was associated with an18.5% reduction in deaths in hospital and an 83.3% reduction in the length of final stay | North America had increasing in cost of hospital care per patient, reductions in admissions but increase the average lengths of stay even more. In other hand staff workload per case increased due to the higher proportion of patients in the immediate |